AMENDMENTS TO THE SPECIFICATION

IN THE SPECIFICATION:

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Please amend the paragraph beginning at line 15, through page 9, line 18, with the following paragraph:

In the accompanying drawings:

Fig. 1 is a block diagram showing the structure of an optical fiber type coherent laser radar device according to a first embodiment of the present invention;

Fig. 2 is a block diagram showing the structure of a transmitting/receiving light splitting device;

Fig. 3 is a block diagram showing the structure of a space type optical amplifier by using an OPA according to a second embodiment of the present invention;

Fig. 4 is a graph representing a relationship between a conversion efficiency of a power from an pumping light to a transmitted light and a crystal length of a nonlinear material at the time of using ~~MgPPLN~~ MgO:PPLN, MgO (magnesium oxide) doped PPLN as the nonlinear material;

Fig. 5 is an explanatory diagram showing a case in which an gain of the transmitted light is lessened or not amplified at all, which is caused by a timing shift of the pumping light because of pulse jitter when a pulse width of the transmitted light is made substantially identical with that of the pumping light according to a third embodiment of the present invention;

Fig. 6 is a graph representing an example in which a deterioration of the gain is suppressed with the pulse width of the transmitted light being made longer than the pulse width of the pumping light according to the third embodiment of the present invention;

Fig. 7 is a graph representing an example in which a deterioration of the gain is suppressed with the pulse width of the transmitted light being made shorter than the pulse width of the pumping light according to a fourth embodiment of the present invention;

Fig. 8 is a block diagram showing the structure of a conventional optical fiber type coherent laser radar; and

Fig. 9 is a block diagram showing the structure of a transmitting/receiving light splitting device shown in Fig. 8.

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Please amend the paragraph beginning at line 18, through page 19, line 15, with the following:

In addition, to amplify the signal light, it is necessary to satisfy conditions (phase matching conditions) where the propagation speeds of the signal light, pumping light, and the idler light are identical with each other. Specifically, it is necessary that the refractive indexes of three wavelengths are identical with each other. In the case where the signal light of 1.5 μm band is amplified, there is employed, as the nonlinear material, single crystal of $LiNbO_3$(LN) or KTP, other than PPLN (Periodic Poled LN) or PPKTP (Periodic Poled KTP) that has the axial orientation of $LiNbO_3$ or KTP periodically reversed, or ~~MgPPLN~~ MgO:PPLN resulting from doping PPLN with magnesium (Mg).

In case of single crystal, phase matching is adjusted according to an incident angle (phase matching angle) to the nonlinear material and the temperature, and in case of PPLN, ~~MgPPLN~~ MgO:PPLN, and PPKTP, the phase matching is adjusted according to the reverse period and the temperature. In OPA using a nonlinear material whose axial orientation has been periodically reversed, the tolerance of an incident angle of the laser beam to crystal is large, and OPA that is high in stability is enabled. In addition, PPLN is large in the nonlinear effect.

However, the normal PPLN is likely to get a damage attributable to a light (photo refractive damage) and is therefore required to keep the temperature to a higher temperature for the purpose of preventing the damage. ~~MgPPLN~~ MgO:PPLN has the nonlinear effect as much as PPLN does. In addition, it is desirable to use ~~MgPPLN~~ MgO:PPLN as the nonlinear material because it is unlikely to get the damage attributable to the light and OPA at a room temperature can be conducted.

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Please amend the paragraph beginning at line 13, through line 20, with the following:

Here, Fig. 4 shows a relationship between the conversion efficiency of a power from the pumping light to the transmitted light and a crystal length of the nonlinear material at the time of using ~~MgPPLN~~ MgO:PPLN as a nonlinear material. A solid line represents a conversion efficiency when the crystal length is changed by one ~~MgPPLN~~ MgO:PPLN, whereas a broken line represents a conversion efficiency in the case where the transmitted light again enters the nonlinear material after the idler light has been removed by a length that allows the maximum conversion efficiency to be obtained in a first nonlinear material.